

314-008 Aspects of TIG welding of nickel alloy 945

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The accelerated technological development of the twentieth century induced the development of high-performance materials, able to work for long periods of exposure at critical conditions of temperature, corrosive environment and intense mechanical stresses. In this context, the group of materials known as superalloys was developed for applications that require a careful material selection, such as aerospace engines, nuclear reactors and oil extraction in the pre-salt layer. The nickel superalloy 945 is one of the materials that present interesting property combinations such as mechanical strength with corrosion resistance. This alloy can be used in aggressive environments containing high concentrations of sulfides and chlorides, as occurs in the extraction of oil and gas industry. This study aims at understanding the influence of current and welding speed on the shape of the welding pool and microstructure of the welded joint in nickel alloy 945, analyzing it by metallography and X-ray diffraction. Hardness of the welding interface and of heat affected zone were measured.